

## ABSTRACT OF THE DISCLOSURE

A calculator calculates an approximate value of a function  $Y = \log (1 + e^{-X})$  using input data  $x$ . In the calculator, a decoder outputs  $m$ -bit data that represents a value corresponding to the slope of a straight line, and further outputs intercept data of the straight line. The straight line interpolates the function  $Y = \log (1 + e^{-X})$  for an interval that includes the input data  $x$  as an  $X$ -value, and has a slope of  $-2^n$ . The intercept data represents  $Y$ -intercept of the straight line. A shifter shifts the input data  $x$  by  $|n|$  bits based on the  $m$ -bit data, and provides the resultant value as first term data. An adder generates the sum of the first term data and the intercept data, and outputs the generated sum as an approximate value of the function  $\log Y = (1 + e^{-X})$ .